

CLAIMS

1. A breathable shoe, characterized in that it comprises the following combination of elements:

-- an assembly (10;310;410) which wraps around the foot insertion  
5 region and comprises a breathable upper (11;311;411);

-- at least one membrane (14;314;414) made of a material which is waterproof and breathable and is associated with said assembly (10;310;410) in a downward region;

-- a sole (16;116;216;316;416) made of perforated elastomer, joined to  
10 said upper (11;311;411) and sealed perimetrically to said membrane (14;314;414);

-- a protective element (17;117;317;417) made of a material which is resistant to hydrolysis, water-repellent, breathable or perforated, arranged below said membrane (14;314;414) in a region between the upper part of  
15 said sole (16;116;216;316;416) and its internal part which is adjacent to the ground contact surface.

2. The shoe according to claim 1, characterized in that said assembly (10) that wraps around the foot insertion region is composed of an upper (11) and a breathable or perforated insole (13) which is sewn to the edges of said  
20 upper (11) according to the manufacturing method per se known as "Strobel" or "ideal welt" so as to form a sack.

3. The shoe according to claim 1, characterized in that said assembly (310) is constituted by a breathable tubular upper (311).

4. The shoe according to claim 1, characterized in that said assembly  
25 (410) is composed of:

-- a breathable upper (411)

-- a breathable or perforated assembly insole (413), under which the edges of said upper (411) are folded and glued so as to form a sack

-- a breathable or perforated filler layer (413a) which is surrounded by the  
30 folded edges of said upper (411).

5 5. The shoe according to claim 1, characterized in that said sole (16;316;416) is made of a block of elastomer with through holes (16a;316a;416a) through its thickness, is joined to said upper (11;311;411) along a perimetric band and is sealed perimetrically to said membrane (14;314;414).

10 6. The shoe according to claim 1, characterized in that said sole (216) has, in its upper part, a hollow region (220) which is delimited perimetrically by a border (221), protrusions (222) protruding from said hollow region (220), and holes or channels (223) being formed in said border (221) and connecting said hollow region (220) to the outside.

7. The shoe according to claim 6, characterized in that each one of said holes (223) is inclined with respect to the ground contact plane so that the outward part is lower than the inward part.

15 8. The shoe according to claim 7, characterized in that said holes (223) have one-way valves which only allow air to flow outward.

9. The shoe according to one of claim 1, characterized in that said sole (16;116;216;316;416) is joined to said upper (11;311;411) by gluing with hydrolysis-resistant adhesives or by high-frequency welding.

20 10. The shoe according to claim 5, characterized in that said sole (16;116;216;316;416) is joined to said upper (11;311;411) by direct injection in a mold.

25 11. The shoe according to claim 1, characterized in that the edge (18;318;418) of said protective element (17;117;317;417) lies inside the edge (19;319;419) of said membrane (14;314;414) in order to allow to form a seal with said sole (16;116;216;316;416).

12. The shoe according to claim 1, characterized in that the edge of said membrane (14;314;414) is folded around the edge of said protective element (17;117;317;417).

30 13. The shoe according to claim 1, characterized in that said protective element (17;117;317;417) is thinned at its edge if it has the same perimeter

as the membrane (14;314;414), so as to allow the sealing adhesive to penetrate between said membrane (14;314;414) and said sole (16;116;216;316;416).

14. The shoe according to claim 1, characterized in that said protective  
5 element (17;117;317;417) is made of a material which is water-repellent and capable of drying rapidly.

15. The shoe according to claim 1, characterized in that said protective  
element (117) is sandwiched between two components (116a,116b) which  
are mutually joined hermetically and into which said sole (116) is divided,  
10 each component (116a,116b) having through holes (116c,116d).

16. The shoe according to claim 1, characterized in that said protective  
element (17;117;317;417) is made of Kevlar fabric or filtering fabric.

17. The shoe according to claim 1, characterized in that said upper  
(11;311;411) is associated with a breathable or perforated lining  
15 (12;312;412) by spot gluing.

18. The shoe according to claim 1, characterized in that said membrane  
(14;314;414) is coupled to a supporting mesh (15;315;415) made of  
synthetic material.

19. A method for manufacturing a breathable shoe comprising the steps  
20 of:

providing an upper assembly (10;310;410) having a breathable upper  
(11;311;411);

providing a membrane (14;314;414) made of a material which is  
waterproof and breathable;

25 providing a sole (16;116;216;316;416) made of perforated elastomer;  
and

mutually attaching said upper assembly (10;310;410) and said  
membrane (14;314;414) and said sole (16;116;216;316;416) such that said  
membrane (14;314;414) is arranged between said upper assembly  
30 (10;310;410) and said sole (16;116;216;316;416) and said sole

(16;116;216;316;416) is sealed perimetrically to said membrane (14;314;414), in a manner to prevent moisture to enter into said upper assembly (10;310;410) from said sole (16;116;216;316;416) through said membrane (14;314;414), and to permit moisture to leave the inside of said upper assembly (10;310;410) through said membrane (14;314;414) and through said sole (16;116;216;316;416).

20. The method of claim 19, comprising:

initially attaching said membrane (14;314;414) to said upper assembly (10;310;410) so that said upper assembly is a unitary upper assembly (10;310;410) including said membrane (14;314;414); and

subsequently attaching said unitary upper assembly (10;310;410) to said sole (16;116;216;316;416).

21. The method of claim 20, comprising attaching said membrane (14;314;414) to said upper assembly (10;310;410) by spot gluing.

22. The method of claim 21, comprising:

providing a breathable insole (13) and an upper (11);

attaching said breathable insole (13) to said upper (11) by means of stitches (13a); and

attaching said membrane (14) to said insole (13).

23. The method of claim 21, comprising:

providing a tubular upper (311), of said upper assembly (310), having a bottom portion extending continuously between two opposite side portions; and

attaching said membrane (314) to said bottom portion of said tubular upper (311).

24. The method of claim 21, comprising:

providing a breathable assembly insole (413), a breathable filler layer (413a), and an upper (411);

attaching folded edges of said upper (411) below said assembly insole (413), and attaching said filler layer (413a) below said assembly insole; and

25. The method of claim 19, comprising:

subsequently attaching said unitary sole assembly to said upper assembly (10;310;410).